

REMARKS

Examiner Su Kim is thanked for the thorough examination and search of the subject Patent Application. Claims 8, 24, 26, 35, and 40 have been amended.

All Claims are believed to be in condition for Allowance, and that is so requested.

Claims 8, 24, 26, and 40 have been amended to overcome the claim objections. The Examiner is thanked for the helpful suggestions.

Reconsideration of the rejection under 35 U.S.C. 102 of Claim 8 as being anticipated by Cunningham is requested in view of amended Claim 8 and in accordance with the following remarks.

Claim 8 has been amended to claim that 1) the hafnium nitride layer is deposited on the gate dielectric layer and 2) the capping layer is deposited on the hafnium nitride layer, as shown in Fig. 6 and as taught on pages 6-7 of the Specification. While Cunningham teaches that a hafnium nitride layer 140 may overlie a gate dielectric layer (under layer 142), the hafnium nitride layer is deposited on a polysilicon layer 142 (paragraph [0049]). Cunningham does not disclose a gate electrode comprising hafnium nitride on a gate dielectric layer and a capping layer on the hafnium nitride layer, as now claimed in amended Claim 8.

Reconsideration of the rejection under 35 U.S.C. 102 of Claim 8 as being anticipated by Cunningham is requested in view of amended Claim 8 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 9-10, 24, 40, 41, 43, and 45 as being unpatentable over Cunningham in view of Hayashi et al is requested in view of amended claims 8, 24, and 40 and in accordance with the following remarks.

Claims 8, 24, and 40 have been amended to claim that 1) the first metal layer is deposited on the gate dielectric layer and 2) the second metal capping layer is deposited on the first metal layer, as shown in Fig. 6 and as taught on pages 6-7 of the Specification. Hayashi et al teach flowing nitrogen and argon into a chamber containing a hafnium metal target. However, Cunningham's gate electrode includes a hafnium nitride layer on a polysilicon layer. Thus, Cunningham in combination with Hayashi et al does not teach or suggest forming a gate electrode comprising a first metal layer on a gate dielectric layer and a second metal capping layer on the first metal layer, as now claimed in amended Claims 8, 24, and 40.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 9-10, 24, 40, 41, 43, and 45 as being unpatentable over Cunningham in view of Hayashi et al is requested in view of amended claims 8, 24, and 40 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 11 and 55 as being

unpatentable over Cunningham in view of Hayashi et al and Kubota et al is requested in view of amended claims 8 and 24 and in accordance with the following remarks.

As discussed above, Claims 8 and 24 have been amended to claim that 1) the first metal layer is deposited on the gate dielectric layer and 2) the second metal capping layer is deposited on the first metal layer. The combination of references does not teach or suggest forming a gate electrode comprising a first metal layer on a gate dielectric layer and a second metal capping layer on the first metal layer, as now claimed in amended Claims 8 and 24.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 11 and 55 as being unpatentable over Cunningham in view of Hayashi et al and Kubota et al is requested in view of amended claims 8 and 24 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 12 and 56 as being unpatentable over Cunningham in view of Hayashi et al and Yeo et al is requested in view of amended claims 8 and 24 and in accordance with the following remarks.

As discussed above, Claims 8 and 24 have been amended to claim that 1) the first metal layer is deposited on the gate dielectric layer and 2) the second metal capping layer is deposited on the first metal layer. This is not taught or suggested by Cunningham or the combination of references. Claims 12 and 56 provide further detail about the amended claimed invention which is not taught or suggested by the combination of references.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 12 and 56 as being unpatentable over Cunningham in view of Hayashi et al and Yeo et al is requested in view of amended claims 8 and 24 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 14, 15, 58, and 59 as being unpatentable over Cunningham in view of Haukka et al is requested in view of amended claims 24 and 40 and in accordance with the following remarks.

As discussed above, Claims 24 and 40 have been amended to claim that 1) the first metal layer is deposited on the gate dielectric layer and 2) the second metal capping layer is deposited on the first metal layer. This is not taught or suggested by Cunningham or the combination of references.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 14, 15, 58, and 59 as being unpatentable over Cunningham in view of Haukka et al is requested in view of amended claims 24 and 40 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 26-27, 35, 37, and 38 as being unpatentable over Cunningham in view of Hayashi et al and Lim et al is requested in view of amended claims 24 and 35 and in accordance with the following remarks.

Claims 24 and 35 have been amended to claim that 1) a first metal layer is deposited on the gate dielectric layer and 2) a second metal capping layer is deposited on the first metal layer. Both Cunningham and Lim et al include polysilicon in their gate electrode stacks. The gate

electrode stack comprising a first metal layer on the gate dielectric layer and a second metal capping layer on the first metal layer, as now claimed in amended claims 24 and 35, is not taught or suggested by the combination of references.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 26-27, 35, 37, and 38 as being unpatentable over Cunningham in view of Hayashi et al and Lim et al is requested in view of amended claims 24 and 35 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 39 and 42 as being unpatentable over Cunningham in view of Hayashi et al and Lim et al and further in view of Haukka et al is requested in view of amended claims 35 and 40 and in accordance with the following remarks.

Claims 35 and 40 have been amended to claim that 1) the first metal layer is deposited on the gate dielectric layer and 2) the second metal capping layer is deposited on the first metal layer. This is not taught or suggested by Cunningham or the combination of references. Claims 39 and 42 provide further detail about the amended claimed invention which is not taught or suggested by the combination of references.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 39 and 42 as being unpatentable over Cunningham in view of Hayashi et al and Lim et al and further in view of Haukka et al is requested in view of amended claims 35 and 40 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 46 and 47 as being unpatentable over Cunningham in view of Hayashi et al and Haukka et al is requested in view of amended claim 40 and in accordance with the following remarks.

Claim 40 has been amended to claim that 1) the first metal layer is deposited on the gate dielectric layer and 2) the second metal capping layer of hafnium nitride is deposited on the first metal layer. This is not taught or suggested by Cunningham or the combination of references. Claims 46 and 47 provide further detail about the amended claimed invention which is not taught or suggested by the combination of references.

Reconsideration of the rejection under 35 U.S.C. 103(a) of Claims 46 and 47 as being unpatentable over Cunningham in view of Hayashi et al and Haukka et al is requested in view of amended claim 40 and in accordance with the remarks above.

Allowance of all Claims is requested.

It is requested that should Examiner Kim not find that the Claims are now Allowable that the Examiner call the undersigned at 845 4525863 to overcome any problems preventing allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'SBA', is written over the printed name of Stephen B. Ackerman.

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